Compiled By Clinton MAYNARD Distributed 7-27-2000 at CAG
Presented to Dr. Hugh SLOAN - Assistant to Surgeon General at Meeting
U.S Dept. of Health & Human Services

495584

Lloyd and Alice Maynard with their Children in 1957

Top photo shows from left to right children Lloyd Jr., Della, Norma and Clinton. These photos were taken at the mine site with the mill in the background. By 1957, the State of Montana knew that the mine was seriously contaminated with asbestos. My father Lloyd, served two tours in Europe World War II, fending off an evil empire, so that he might have a safe environment to raise a family. Dad died at age 64 of Asbestosis, he suffocated to death. Mom died at the age of 71 after enduring 10 years of dialyses. Did asbestos contribute to her death? After months of research, I would say probably, but the studies are incomplete. The littlest person pictured has been diagnosed with asbestosis. The other children pictured have not been tested yet. I request that this page be attached to the letter I wrote to Rebecca Hanmer, dated July 16, 2000, to put faces to my words.

Clinton Maynard

This letter was presented to Rebecca Hammer, EPA Region 8 along with other information, June 15, 2000.

By 1935, it was known that asbestos caused lung disease. By 1956, the State of Montana knew that the mine in Libby had a serious asbestos problem. The State of Montana's occupational health agency asked that efforts be made to reduce the hazard to the workers. These requests continued for many years that followed. Steps were taken to reduce the asbestos levels in the workplace, obviously those steps were highly inadequate. It is hard to believe that a state health official could go to that mine - mill site and not see the plume of dust coming out of the dry mill. It is also hard to believe that it never occurred to these health officials that maybe this asbestos dust might be going to the entire population in the area. Hundreds of tons of asbestos dust were spewing from that mountain each year and the state had, evidently , no concern for the surrounding populations.

Evidently, at some point the federal government came to the realization that asbestos is deadly toxic. OSHA began lowering the Permissible Exposure Level (PEL) in the occupational setting, (exposure levels allowed over an 8-hour work day).

In occupational settings, optical microscopes are used to do fiber counts, with the size limit being longer than 5 microns in length, and measured per cubic centimeter of air (fibers/cc). For comparison, the typical sugar cube would measure just over 3 cubic centimeters (3 cc). In 1971, OSHA set an occupational Permissible Exposure Level of 12.0 fibers/cc. In 1972, this level was reduced to 5.0 fibers/cc. By 1976, the Permissible Exposure Level was reduced to 2 fibers/cc. In 1986, this occupational Permissible Exposure Level was reduced to 0.2 fibers/cc. Today's Permissible Exposure Level in an occupational setting is set by OSHA at 0.1 fibers/cc.

In December 1975, during a rainy period, W.R. Grace sampled the air in downtown Libby, resulting in fiber counts ranging as high as 1.5 fibers/cc. This means that the people who lived in Libby at that time in 1975, were exposed to 15 times the level of asbestos air pollution currently allowed by OSHA in the occupational setting. The resident, exposed to this level of air pollution, would have inhaled over 20 million toxic asbestos fibers in a 24 hour period. In 1980, Midwest Research Institute, commissioned by the Environmental Protection Agency (EPA), came up with an optical count of .5 fibers/cc, outside Libby, during a time in October when it had been raining. This October 1980 count was after the new wet mill was in operation, which came on line in the mid 1970's. While data is limited, it is safe to say that these were not isolated instances and that during dry weather times and periods of inversions over Libby, asbestos fiber counts could have been much higher. W.R. Grace ceased operations in 1990. This would highly suggest that EPA as well as the State of Montana, not to mention W.R. Grace, had no concern for the safety of the populations of Lincoln County Montana. Maybe the people of Lincoln County should let government off the hook and just say "you guys shouldn't have been sleeping on the job."

W .R. Grace did what industry does - make a profit and get away with as much as you can. This is why we have government agencies such as the EPA, Montana Department of

Environmental Quality, and Montana Department of Health and Environmental Sciences, to oversee industry and to make sure what happened here, doesn't happen. These government agencies are entrusted by the people, so that we don't, have to walk around with microscopes, testing the air we breathe.

Our governments have grossly failed us, and what do we get? We get to live with diseases and death, and we get to listen to government say, "don't come to us for your long-term health needs". Does W.R. Grace really care about our health or health care? Their contribution in the form of asbestos has made the answer pretty clear.

We are a population that have been exposed, without choice, to a toxic substance that will bring us cancer, disability , suffocation and death. If government has any dignity or compassion, the people of Lincoln County Montana, United States of America, will be compensated with the finest, full medical coverage, that is honored, where we may choose to seek treatment. We will also be compensated with the diligent research effort that is needed to find the answers to curing the diseases that we are faced with.

We will be provided with reclamation efforts that will provide a clean environment for our future. The people will be provided educational programs that will teach us about the toxicity of tremolite asbestos and what past exposure means to our health. Education that might afford us the opportunity to make informed decisions in regard to our health care. We will be provided with air quality monitoring on a weekly basis, which will inform us of asbestos fiber counts for all size fibers. The people of Libby and Lincoln County have the right to know. This environmental disaster has impacted our health, our economy and many of us will have been robbed of our golden years. We were given no choice.

Finally, the people of Lincoln County are encouraged by the new faces of the EPA and ATSDR, Paul Peronard and crew , who have presented themselves with sincerity and heartfelt concern. We feel that if provided with the means, these folks will do what is right for the people and our environment. Our federal government spends billions of tax dollars on smart bombs, in the name of keeping Americans out of harm's way, we too are Americans.

Sincerely,

Clinton Maynard

Lincoln County Residents and Fellow Americans

Presented to Max Baucus U.S. Senator Clinton MAYNARD
by Clinton Maynard - Resident 5-31-2000
Town meeting - Libby, Mt.

Good morning, Mr. Baucus. It is good to see you again. The 1985 EPA Study states: I quote, "Virtually all of the mineral deposits are in rugged country, removed from heavily populated areas." The words, removed from significant populations, would have been more appropriate. That's what we were, an insignificant population.

Max, Libby Montana has been dumped on, I use the term "dumped on" broadly. We have been subjected to toxic pollution levels, for decades, at least 15 times higher than is allowed in the occupational setting.

Where did we go wrong? We lived here and we trusted our governments and our industry. We trusted that our governments would not allow something like this to happen to us.

Max, I take it you are a man of his word. At the cold Senate hearing in February you said you'd be back and here you are. Thank you, and thank you for the efforts you've made on our behalf.

A quick update goes like this: we know more about this issue than we did in February, our economy is worse than ever, and we are still faced with the uncertainty of how we're going to get through this. We were left with the impression in February that, don't worry, your government will help you get through this. Well, we're still trying to deal with W.R. Grace, as to which segment of this population gets dumped on some more.

Max, our flag is flying upside down, we are a population in distress. We had faith in Bill Yellowtail, he's gone and we want him back. Our uncertainty grows.

We are faced with disease, our immune systems have been compromised, and we have no cure yet for cancers.

This exposed population should not have to deal with W.R. Grace for health care coverage. It is insult upon insult.

Max, we saw you on C-SPAN recently, you used words like:
"Make this country do what's right."
"You're the boss, we're the employees."
"Give us our marching orders."

These are strong American words, words that reflect the ideals of American Patriots throughout our history. Max, your words encourage us and give us hope. Anyway, here are your marching orders:

1. The people of this population need medical coverage. Full medical coverage. Coverage that is good where we choose to seek medical care. This medical coverage needs to be provided by the Federal Government and if the people of

America wish for the funding to be reimbursed from W.R. Grace, then so be it. This should not be our fight alone. This could have happened anywhere in America, and we need support from America.

2. We need economic support. We need help to get us through this. Jobs and economic relief.

3. For those who can no longer compete in the work force, there is a need for long term and immediate assistance. These people had no choice and need compensation.

4. This exposed population that smokes tobacco is at risk of developing lung cancer, 70-80 times greater than a population that has not been exposed to asbestos. We need to be provided with the medicines to help us quit smoking.

5. The medical screening that the Agency of Toxic Substances and Disease Registry is providing is a temporary thing. This population and the people who once lived here need ongoing medical screening. Funds need to be provided to get all those people back here.

6. This population needs a laboratory set up here to monitor our environment. A lab with an optical microscope and an electron microscope. This lab would be for the use of residents who wish to be trained to do private monitoring for Libby. A non-Government laboratory.

7. Research needs: We live in a time that the cure for cancers may be just around the corner. This population may or may not have been exposed heavily enough to produce the lung fiber burden disease know as "asbestosis". But, we undoubtedly have been exposed enough to produce greatly increased risk of cancers. The research that has been done on asbestos health affects is, at best, incomplete. Our hope to live through this lies in research. We desperately need the research.

These are our immediate needs and are being presented, for the time being, as requests. This population expects fair treatment in this matter, for the first time in 60 years.

Max, as you pursue our needs, remember this, our ignorance and trust were used against us. It seems we were sold out by our governments and we would have no list of needs if our governments had been there for the people.

And know this, no amount of compensation can bring our loved ones back, or replace the years of life that will be lost here in this population.

Max, make this country, this government do what's right. God speed and thank you!

Clarke Maynard

Received 7-16-2000

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466
http://www.epa.gov/region08

JUL 11 2000

Ref: 8OC

Mr. Clinton Maynard
1116 Louisiana Avenue
Libby, Montana 59923

Dear Mr. Maynard:

I want to personally thank you for taking time to meet with me over lunch on Thursday, June 15, 2000. I enjoyed our discussion and came away feeling I had learned a great deal from you about community concerns in Libby.

I also want to thank you for taking the time to compile a list of the most pressing community concerns. I have reviewed the list and am currently working with the Libby team to respond to all of your concerns. I will see that key people at the Environmental Protection Agency (EPA) Headquarters in Washington, D.C. are aware of your concerns. *

In the meantime, I want to touch on two issues that came up during our lunch discussion and were reiterated in the list of community concerns: 1) long-term health care for Libby residents; and 2) resolution of EPA's past actions regarding asbestos.

Regarding long-term health care, while EPA does not have the authority to provide long-term health care or necessarily set up research facilities, we will do all we can to leverage resources and help the Libby community develop sustainable health care services.

Regarding EPA's past actions, I have signed a letter (along with EPA Assistant Administrators Tim Fields and Susan Wayland) requesting an evaluation by the Office of Inspector General into the Agency's past actions about asbestos at the W.R. Grace facility in Libby. We have also requested that this evaluation be coordinated with other federal agencies.

We will have a response to the list of community concerns to you as soon as possible. The EPA Libby team has my full support. Our cleanup actions in Libby remain a priority.

* I gave your package to the Administrator's Office when I went to Washington on June 30 and will be following up with them this week.

For your information, we are planning a public meeting on Thursday, July 13, 2000 from 7:00-9:00 pm in the Veterans' Memorial Gym. We plan to discuss the latest sampling results and our on-going clean up activities in Libby.

If you have any additional questions, please feel free to contact me at 1-800-227-8917 x6308 or Paul Peronard, lead On-Scene Coordinator, of my staff at 1-800-227-8917 x6808.

Thank you again for your time.

Sincerely,

Rebecca Hanmer

Rebecca W. Hanmer
Acting Regional Administrator

July 16, 2000

Ms. Rebecca W. Hanmer
Acting Regional Administrator, Region VIII
United States Environmental Protection Agency

Dear Rebecca:

At our meeting recently, I presented you with a package of information which I had compiled on short notice. This information was intended to express to you and Carol Browner, the magnitude of our situation here in Libby. As you and Carol reviewed this information, I would imagine that your thoughts were the same as mine, this is bizarre, unbelievable, beyond imagination, that something of this magnitude could have happened in the United States of America. That the love of money could outweigh the value of human life. All my life I have believed that America is the most honorable country in the world, today I know that our great nation is in grave trouble and it is our responsibility as Americans to try to help fix it.

For the people of Libby, Montana, without the cure for cancers, there is little that can be done except to ease our suffering and our minds as we deal with death and dying. Our only hope to live through this "insult" that we have been subjected to, lies in cancer research. We are on our knees pleading for our lives. If today, the lives of the people of Libby Montana mean anything, there will be major funding for cancer research. This is something that is needed, not just for us, but for all of mankind. But, as is said, the money is in causing disease not curing it.

In America today it seems that all that is important is the economy, people take the back seat. We are not a great Nation if we don't care about our greatest resource--the people. This is what needs to be fixed, we need to care about 600,000 homeless people on the streets in America. We need to care that an American worker is allowed to inhale 456,000, optical size, toxic asbestos fibers, in his workplace, in 8 hours, because it is not feasible to monitor the workplace with an electron microscope. We need to care that people will be exposed, needlessly, because asbestos tailings were used on a road and it is OK because it was, by definition, a by-product of the mineral being mined.

Rebecca, this way of thinking has got to change. Our priority needs to be re-focused from money, to people.

After months of researching our issues here in Libby it is apparent that asbestos is so toxic, that what you folks at EPA tried to do years ago, needs to be done today--total ban on the stuff. With what has happened here in Libby and at the exfoliation sites across the country, I don't see how the science can be ignored any longer. We live in a country where our governments are continually passing laws to protect citizens from themselves, yet we can't trust our governments to protect us from toxic pollution. If EPA does not have the power to change and enforce environmental laws, the people need to know, so that we can take the steps that are necessary to create an agency that can. Please inform us.

Rebecca, I requested response to the information I presented you. After trying to put myself in your shoes, trying to verbalize response to our situation, I find that this would be an awesome task and that your efforts would be better spent trying to do something about our situation. Action is needed more than words. Your action to bring an investigation forward was a good start toward an

action response, thank you. We have the right to know how this happened to us, knowing cannot give us our years back, but may help us to deal with our anger.

The greatest need, second to cancer research, that the people of this exposed population have today, is to know how we are going to have the medical cost, associated with this insult, met. We live with this great uncertainty and it is a huge burden. At every CAG meeting, we hear of lack of funding for even the smallest things, such as monies to get former employees back here for the medical screening. Our governments failed us and it is only right that the governments end the uncertainty that we endure, with commitment. It seems that this must be taken up with the US Dept. of Health and Human Services and we ask that you would proceed.

Finally, EPA has, largely, developed a trust with the people of Libby, and due to the State of Montana's inability to comprehend the toxicity of tremolite asbestos, even in the year 2000, it seems prudent, that EPA maintain full jurisdiction over this environmental disaster, until further notice from the people.

Rebecca, thank you so much for caring.

Sincerely,

Clinton Maynard

Clinton Maynard

P.S. Please feel free to present this letter as you pursue.

Attached to this letter are 6 pages including cover pages, which are examples of a way of thinking which causes concern.

1. Determination statement letter to Aimee Taylor, Montana Superfund dated November 19, 1992 concerning Asbestos NESHAP Roadway Standard. From Ron Rutherford, Chief Enforcement and Compliance Monitoring Section EPA Region 8.

2. Response to the public from Montana Department Environmental Quality in regard to Potential On-going Hazard from Mine Site.

These materials are found in the Public Hearing Transcript of Proceedings Dated March 2, 2000 and attachments Dated March 28, 2000, concerning Final Reclamation Bond Release Request.

Montana Department of
ENVIRONMENTAL QUALITY
Marc Racicot, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • E-mail: www.deq.state.mt.us

March 28, 2000

Dear Reader:

Enclosed are the Attachments and Figure 1 for the Responses to Public Comments on the Final Reclamation Bond Release Request from the Kootenai Development Company Regarding Operating Permit 00010:

Attachment 1, Rainy Creek Road Sampling Results, 1991 – 1992
Attachment 2, DNRC – DSS 1999 Dam Safety Inspection
Attachment 3, Water Quality Data, 1991 – 1999
Attachment 4, MSHA Inspection Reports Summary at the W R Grace Mine
Attachment 5, 1990 MT Department of Commerce Publication
Attachment 6, Why Asbestos Is Not Banned – Helena IR Article, Feb. 11, 2000
Figure 1, General Location Map of W R Grace Vermiculite Mine

If you have any questions, please call me at (406) 444-4960.

Sincerely,

Patrick Plantenberg
Acting Section Supervisor
Hard Rock Program

Enclosures: 7

File 00010.832

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

Ref: 8ART-AP

November 19, 1992

Aimee Taylor
Montana Superfund
Cogswell Building
Helena MT 59620

Dear Ms. Taylor:

Enclosed is a copy of the Determination Statement Concerning Applicability of Asbestos NESHAP Roadway Standard as it applies to the W.R. Grace mine property near Libby Montana.

Sincerely,

Ron Rutherford, Chief
Enforcement and Compliance
Monitoring Section

Enclosure (1)
cc:Andrea Guthrie, ORHB
Ron Anderson, Lincoln County

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 6 1992

MEMORANDUM

SUBJECT: Determination Statement Concerning Applicability of Asbestos NESHAP Roadway Standard

FROM: John B. Rasnic, Director
Stationary Source Compliance Division
Office of Air Quality Planning and Standards

TO: Doug Skie, Chief
Air Programs Branch
Region VIII

This memorandum is in response to your October 22, 1992 memorandum requesting our written determination on the applicability of the Asbestos NESHAP Roadway Standard (40 CFR §61.143) to a permanent road covered with mill tailings located on W. R. Grace Co.'s vermiculite mine property in Libby, Montana. These mill tailings have asbestos contamination from the mine, however, the asbestos in this case has no commercial value.

The Asbestos NESHAP Standard for Roadways controls the use of asbestos tailings or asbestos-containing waste material in the construction of a roadway. Therefore, the material from W. R. Grace Co.'s vermiculite mine would have to fit the definition of asbestos tailings or asbestos-containing waste material. Asbestos tailings is defined as "...any solid waste that contains asbestos and is a product of asbestos mining or milling operations." Asbestos-containing waste materials is defined as "...mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provision of this subpart...." Commercial asbestos is defined as "...any material containing asbestos that is extracted from ore and has value because of its asbestos content."

Since the tailings are a product of vermiculite mining, not asbestos mining, the tailings do not meet the definition of asbestos tailings. Additionally, the tailings do not contain commercial asbestos since the asbestos in this case is a contaminant and does not add value to the vermiculite. Since the tailings are not considered to be commercial asbestos, they can not be considered to be asbestos-containing waste materials. Therefore, the tailings from the vermiculite mining operation are not subject to the Standard for Roadways under the Asbestos NESHAP.

This determination has been coordinated with EPA's Office of Enforcement and the Emission Standards Division of the Office of Air Quality Planning and Standards. If you have any questions, please contact Tom Ripp of my staff at (703) 308-8727.

cc: Sims Roy, ESD (MD-13)
Charlie Garlow, OE (LE-134A)
Tom Ripp, SSCD
Chris Oh, SSCD
Regional Asbestos NESHAP Coordinators

Montana Department of
ENVIRONMENTAL QUALITY
Marc Racicot, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • E-mail: www.deq.state.mt.us

March 2, 2000

Dear Reader:

Enclosed are the agencies' responses to public comments on the final reclamation bond release request from the Kootenai Development Company regarding Operating Permit 00010. Operating Permit 00010 is the site of the former W R Grace vermiculite mine near Libby, MT. The responses also address other health related issues brought up by the public during the bond release process.

The public hearing Transcript of Proceedings and public comment letters received have been partially corrected for typographical errors. For ease of review by the public the responses to the comments are on the right facing pages in the document, so that they are opposite the comments on the left facing pages. The agencies hope that this format makes it easy for readers to find the responses.

The reclamation bond will not be released until the investigation at the mine site is completed.

If you have any questions, please contact me at the above address.

Sincerely,

Patrick Plantenberg
Acting Section Supervisor
Hard Rock Program

File 00010.832

Response: Comment 1-3, Bond Release Hazard Assessment

Potential On-going Hazard From Mine Site

DEQ saw the reclamation efforts as the answer to any potential on-going hazard from airborne dust. The only dust observed by DEQ inspectors during the reclamation process was 1) along the active roads in the mine areas being used to haul reclamation materials, 2) behind the vehicles being used to conduct the inspections and of course, 3) dust along the Rainy Creek road.

Rainy Creek Road Sampling

Prior to the commencement of the 1999 bond release procedure, the only issue raised by the public in regard to reclamation of the mine site, related to dust emanating from the Rainy Creek road. Lincoln County officials and the mining company developed a sampling plan along the Rainy Creek road in 1991 and 1992 to address this issue. Asbestos fiber levels were below accepted industry standards for the sampling method used (see Attachment 1).

Dust levels from the Rainy Creek road should be higher than from the mine site where the only post-reclamation traffic would be from management activities of the landowners. Therefore, after the Rainy Creek road sampling results demonstrated fiber levels below accepted industry standards for the sampling method used, DEQ issued bond releases for the mine site based on the conclusion that even lower asbestos fiber levels were present. DEQ would not have released the bond if there had appeared to be a continuing risk to the public from the mine site.

Sampling in 2000

In 2000, DEQ will coordinate with local county officials, EPA and other agencies to reevaluate whether the mine site presents a continuing risk to the public. Air monitoring will be conducted in Libby and the mine area to answer public concerns. If past conclusions about the lack of an on-going hazard from the mine site by DEQ are proven wrong, further reclamation will be performed under State and Federal Superfund statutes for the 900 acres already released. For the 125 acres on which DEQ still holds bond, reclamation plans will be updated under Section 82-4-337, MCA.

Air Pollution From the Mine Site

DEQ did not consider the public to be at risk from dust off the mine site as explained above in the Rainy Creek Road Sampling section.

Public Safety Addressed in Reclamation Process

The DEQ addressed public safety of the impoundment with the Montana Department of Natural Resources and Conservation (MDNRC), Dam Safety Section (DSS). In 1992, W R Grace requested a change to the reclamation plan for the impoundment to provide a spillway rather than diverting Rainy Creek around the impoundment. The tailings impoundment is considered a high hazard dam

JANUARY 2000

Brought to your attention by:

Concerned Libby, MT Residents

AREA ASBESTOS RESEARCH GROUP
(AARG)

This information has been taken as fact and has been compiled in the name of the education of the public concerned.

This information has been taken directly from:

United States Environmental Protection Agency

Office of Toxic Substances Washington, D.C. 20460

EPA 560/5-85-013 February 1985

PB85-183085

Toxic Substances

Exposure Assessment for Asbestos - Contaminated Vermiculite

REPORT DOCUMENTATION PAGE

1. REPORT NO. EPA 560/5-85-013

2.

3. Recipient's Accession No. PB85 183085/AS

4. Title and Subtitle: Exposure Assessment for Asbestos-Contaminated Vermiculite

5. Report Date: 2/85 (Date of Approval)

6.

7. Author(s) Gina H. Dixon, John Doria, J. Randall Freed, Patricia Wood, Ira May, Thompson Chambers, Purna Desai

8. Performing Organization Rept. No.

9. Performing Organization Name and Address: Versar Inc. 6850 Versar Center Springfield, VA 22151

10. Project/Task/Work Unit No. 1 and 16

11. Contract(C) or Grant(G) No. (C) 68-01-6271 and (G) 68-02-3968

12. Sponsoring Organization Name and Address: United States Environmental Protection Agency Office of Toxic Substances Exposure Evaluation Division Washington, D.C. 20460

13. Type of Report & Period Covered: Final Report

14.

15. Supplementary Notes: EPA Project Officer, Michael A. Callahan: EPA Task Manager, Lynn A. Delpire

16. Abstract (Limit: 200 words)

This document is an exposure assessment for asbestos-contaminated vermiculite. Such exposure is found to occur mainly via inhalation: ingestion and dermal adsorption are insignificant routes of exposure. Vermiculite is released to the air during mining, milling, exfoliation, transport, and use. These operations may also release some asbestos fibers, which are readily transported through the atmosphere.

17. Document Analysis a. Descriptors

Asbestos, Air pollution sampling, Industrial hygiene, Environmental monitoring, Environmental exposure pathway, Particle resuspension, Mineral industry, Exposure, Indoor air pollution.

b. Identifiers/Open-Ended Terms

Vermiculite, Inhalation exposure, Occupational exposure, Consumer exposure, Ambient exposure

c. COSATI Field/Group 06 J, 08 G, 081, 13 B.

18. Availability Statement: Unlimited

19. Security Class (This Report): Unclassified — 21. No. of Pages: 119

20. Security Class (This Page): Unclassified — 22. Price

7.3 Populations Exposed to Asbestos-contaminated Vermiculite in the Ambient Environment

Persons living near mines, mills, and exfoliation plants are exposed to asbestos fibers emitted from baghouses and other control devices, as well as uncontrolled fiber emissions. Section 5 discussed the transport of these fibers from exfoliation sites; it was seen that the fibers were widely dispersed within the 50 km radius addressed by ATM, affecting all those living within the area.

The four American vermiculite mines are found at three sites: Libby, Montana; Enoree, South Carolina (two mines); and Louisa, Virginia. The estimated 1980 population of these three towns is 4,680 persons (Bureau of Census 1981), all of whom could experience ambient exposure to asbestos fibers from mining and milling operation emissions.

Industrial sources, such as stack emissions from exfoliation plants and industrial users of vermiculite, probably contribute the bulk of asbestos from vermiculite. Waste pile emissions may be another source. Mining emissions, such as the dust produced from the strip-mining of vermiculite deposits, cause localized asbestos contamination of air. 27
Workplace and other indoor sources may increase atmospheric asbestos levels.

Particles larger than the respirable fibers settle more quickly and would not be as widely transported from a point source; the geographic range of exposure would be limited to the immediate area. The greatest exposure 33

Mining, milling, and exfoliation of vermiculite almost certainly account for the vast majority of the environmental release of asbestos from vermiculite. Virtually all of the mined deposits are in rugged country removed from heavily populated areas. Vermiculite is transported through the country in its unexfoliated state along all major routes of transportation. Atmospheric asbestos dust settles or is washed out by precipitation; it then returns to the soil and to waterways. Asbestos fibers are easily resuspended by wind and water and can be redistributed widely. Because of its stability, asbestos must be regarded as persistent in the environment with an ultimate sink in soils or sediments.

There are 52 vermiculite exfoliation plants in 32 states (JRB 1982). 61

Fiber levels within the exfoliation area vary between nondetectable and 0.38 f/cc. 81

calculated. It should be noted that St. Louis SECPOP data indicate that there were residences within 1 km of the site and that exposure to those individuals was high. 92

Table 21. Worst-case Individual Exposure Level Profile

Source of exposure	Exposure level[a]
Working in an exfoliation plant 2,000 hours yearly	0.38 fibers/cc
Living in city with exfoliation plant 8,736 hours yearly	0.025 $\mu g/m^3$
Fertilizing garden once yearly for one hour	28 $\mu g/m^3$
Fertilizing lawn once yearly for four hours	4.4 $\mu g/m^3$
Insulating attic for 8 hours once in lifetime	6,800 $\mu g/m^3$

94

Particles larger than the respirable fibers settle more quickly and would not be as widely transported from a point source; the geographic range of exposure would be limited to the immediate area. The greatest exposure 33

Not all inhaled asbestos fibers are respirable; a fraction of particles entering the bronchi are cleared from the respiratory system and are subsequently ingested (Timbrell 1965). The exact dimensions of respirable particles are not known, but particles greater than 10 µm are generally too large to be retained in the lungs (Stern 1976). 33

Evidently, a rainfall rate of 0.15 in/hr (3.8 mm/hr) reduces the concentration of spherical particles 4 µm in diameter by 50 percent in two hours. Larger particles are removed more efficiently. 22

From Figure 2, fibers 1.6 µm in diameter would theoretically fall three meters in about one hour while single fibrils would require over 15 days. 22

After a week of precipitation, the concentration of fibers longer than 1.5 µm was significantly suppressed, while levels for fibers of length less than 1.5 µm appeared unaffected. Removal rates for nonspherical particles are unknown. 25

(1) Ambient Exposure Near Mines and Mills. A total of about 4,680 persons live in the three towns with vermiculite mines. All are probably exposed to asbestos fibers from controlled and uncontrolled emissions. Monitoring data collected at points around mines and mills indicate that levels of asbestos range from undetected to 0.5 fibers/cc. A full-time resident could be exposed to this level 24 hours per day. The respirable fraction of this level has not been determined. No further data are available to characterize ambient exposure around mines and mills. 91

Low mixing heights, low wind speeds, and the absence of precipitation suppress dispersion and lead to raised pollution levels; the persistence of all three conditions is associated with air pollution episodes. Figure 1 gives some indication of the frequency of such episodes. Air pollution episodes can be particularly acute in industrialized valleys where inversions are a dominant meteorological phenomenon.

5.2.1 Inhalation of Asbestos-contaminated Vermiculite

Airborne emissions of vermiculite constitute a minority of releases to the environment (See Section 4.0). However, the asbestos fibers in these emissions are persistent and readily transported through the ambient atmosphere. Asbestos fibers of respirable sizes (<10μm) are small and settle very slowly (Sawyer and Spooner 1978).

6.1 Monitoring of Mining and Milling Facilities (MRI 1982)

Because of priority shifts within EPA, the second phase was not undertaken and the scope of the first phase was reduced. Sampling trips were made to the W.R. Grace mine and milling facilities, near Libby, Montana, during October 21 through 26, 1980.

6.3 Monitoring of Ambient Air Near Mines and Mills

The MRI monitoring study (MRI 1982) included some area sampling in the vicinity of mines and mills (Table 10, stationary samples). A maximum of 0.5 f/cc was recorded in Libby about 4.5 km downwind of the mine.

Table 10 is a summary of the phase contrast results of the air samples. Only one of the analyzed air samples exceeded 2.0 fibers/cc. However, the rainy weather conditions at the time of sampling for all three locations might have resulted in lower than normal fiber counts.

Waste pile emissions may be another source. Mining emissions, such as the dust produced from the strip-mining of vermiculite deposits, cause localized asbestos contamination of air. Workplace and other indoor sources may increase atmospheric asbestos levels.

Emissions from waste piles are recognized as potentially important. During periods of high winds, asbestos has been observed at a playground and in houses near one dump (USEPA 1974). Atmospheric asbestos emissions from industrial dumps and mine tailing piles were investigated by Harwood and Blaszak (1974) and by Harwood and Ase (1977). Dumps were determined to be a significant and possibly hazardous source of asbestos fiber; the reentrainment of unbound asbestos fibers proved to be responsible for most of the emissions. Particulate emissions from tailing piles have been estimated under various climatic conditions by PEDCO (1973).

END OF ABSTRACT

REPORT

COLLECTION, ANALYSIS AND CHARACTERIZATION OF VERMICULITE SAMPLES FOR FIBER CONTENT AND ASBESTOS CONTAMINATION

TASK 32
FINAL REPORT

September 27, 1982

EPA Prime Contract No. 68-01-5915
MRI Project No. 4901-A32

Prepared for

U.S. Environmental Protection Agency
Office of Pesticides and Toxic Substances
Field Studies Branch
401 M Street, S.W.
Washington, D.C. 20460

Attn: Dr. Frederick Kutz, Project Officer
Mr. Thomas Dixon, Task Manager

COLLECTION, ANALYSIS AND CHARACTERIZATION OF VERMICULITE SAMPLES FOR FIBER CONTENT AND ASBESTOS CONTAMINATION

by

Gaylord R. Atkinson
Donna Rose
Ken Thomas
David Jones
E. J. Chatfield
John E. Going

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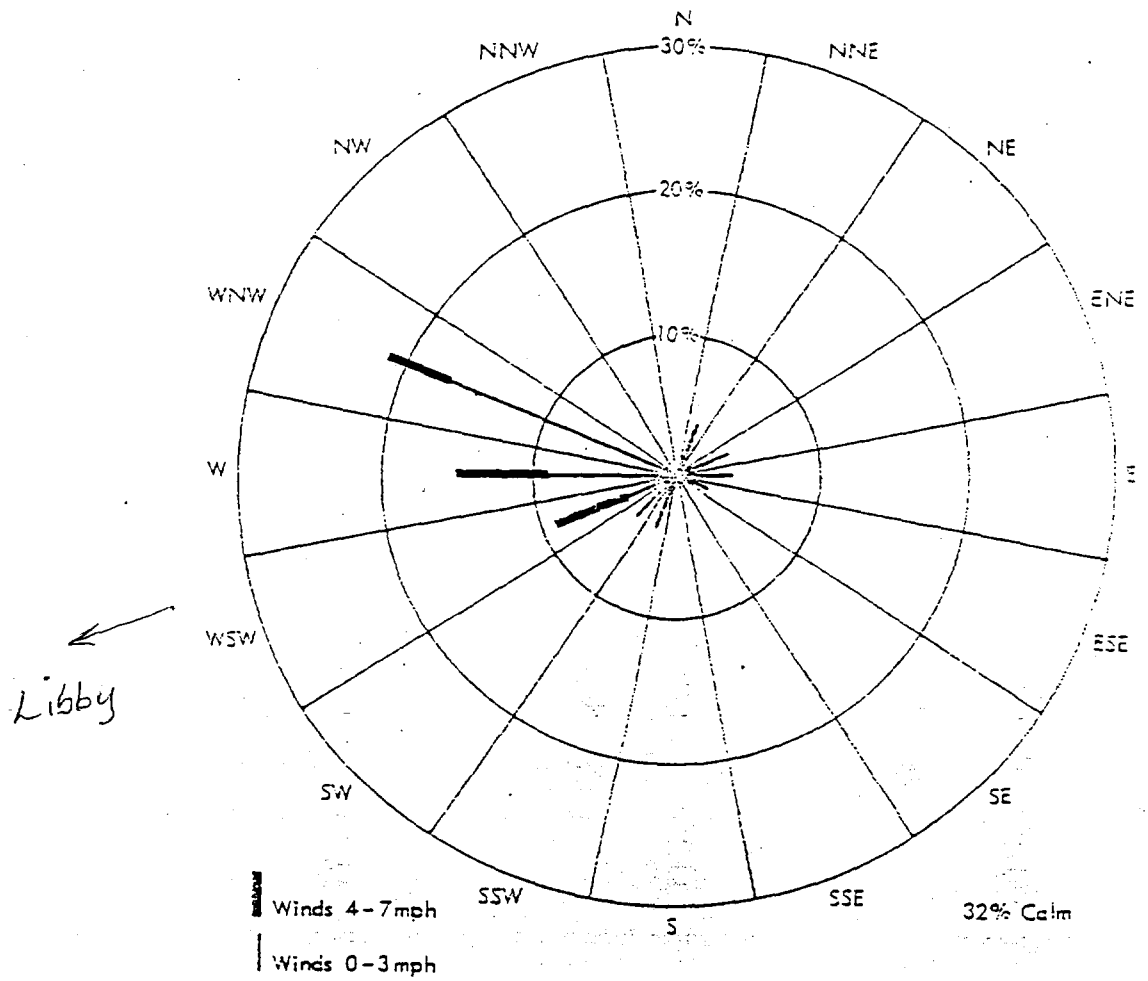

Figure 1. Wind rose pattern showing the direction and intensity of the wind during the air sampling period at the Grace, Libby, Montana, facility.

WORKERS DEAD FROM ASBESTOS DISEASE

Key to Death Certificates evaluation by Dr. Whitehouse:

A1	=	Asbestosis for sure
A2	=	Probable Asbestosis
A1,C1	=	Asbestosis and Asbestos Lung Can
A1,M	=	Asbestosis and Mesothelioma
C1	=	Asbestos Lung Cancer for sure
C2	=	Probable Asbestos Lung Cancer
M	=	Mesothelioma

⋆ Died of LC within 10 yrs. of 1st exposure - not included in cumulative totals.
† If coded A1,C1 or A1,M, deceased worker will be tallied in Asbestosis column.

YEAR	NAME	YRS @ WRG	DEATH BY ASBESTOS DISEASE		DEATH TOTALS		
			Asbestos Lung Cancer	Asbestosis	Asbestos Lung Cancer	Asbestosis	Tot.
1960	Rudolph Engle	46-60	C1		1		1
1961	William Airth Glenn Taylor Charles Wagner	46-57 44-59 49-59		A2,A1 A1 A2	1	3	4
1963	Raymond Orsborn Ottis Mast	48-50 47-56	C1 C1		3	3	6
1966	John Ludwig Walter McQueen	57-66 44-62	C1	 A1	4	4	8
1967	⋆Merle McComas	58-67	C1				
1968	Raymond Bleich William Hedrick	35-68 57-68	C1	 A2	5	5	10
1969	William Shows Jimmie Starr	47-48 52-56	C1 C1		7	5	12
1970	William Smithers	50-52		A1,C1	7	6	13
1971	Orville D. Murray	49-52		A2	7	7	14
1973	Lionel Van Horn Henry Hammer	50-73 48-54	C1	 A2	8	8	16

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YEAR	NAME	YRS @ WRG	DEATH BY ASBESTOS DISEASE		DEATH TOTALS		
			Asbestos Lung Cancer	Asbestosis	Asbestos Lung Cancer	Asbestosis	Total
1974	Lilas Welch	49-67		A1			
	Perley Vatland	55-74		A1	8	10	18
1975	Lawrence Kins	46-49		A2	8	11	19
1976	Edward Dinwiddie	45-55	C1				
	Roy Dawson	38-43	C1		10	11	21
1977	Robert Cohenour	48-74	C1				
	Thomas Craver	59-77		A2	11	12	23
1978	Harold Day	65-76	C1				
	Ted Wright	51-56	C1				
	Glenn Mitchell	62-78	C1				
	*Peter Roberts	70-74	C1				
	Lloyd Miller	48-76		A1,C1			
	Orville G. Murray	37-45		A1,C1	14	14	28
1979	Verle Olson	46-62	M				
	Robert Weitzel	51-56		A2	15	15	30
1980	Clarence Peterson	46-53	M				
	Richard Rayome	46-75	C1		17	15	32
1981	Morris Ahrenkiel	47-50	C1				
	John Parker	48-50	C1				
	Robert Dahms	57-72		A1,C1	19	16	35
1982	Morland Baker	47-49	M				
	James Gidley	53-78	C1				
	Virgil Priest	61-78	C1				
	Allen Boothman	48-67		A2	22	17	39
1983	Peter Powell	44-55	C2				
	Michael McNair	43-75		A1,M			
	Kenneth Koehler	57-64	C1				
	Walter Baker	45-74		A1			
	Herbert Waltman	37-40	C1		25	19	44
1984	Hord Kimble, Jr.	62-65		A1,M	25	20	45

YEAR	NAME	YRS @ WRG	DEATH BY ASBESTOS DISEASE		DEATH TOTALS		
			Asbestos Lung Cancer	Asbestosis	Asbestos Lung Cancer	Asbestosis	To
1985	Joseph Lyon	42-43		A1			
	Walter Dutton	48-55		A1			
	Lyle Warner	57-66		A2	25	23	4
1986	Robert Vinion	56-67		A1,C1			
	Calvin Henderson	49-52	C1				
	Roy McMillan	43-49		A2	26	25	5
1987	Merle Everett	62-64	C1				
	Ronald Johnson	60-76		A1,M			
	James Smith	51-68	C1				
	John Kilpatrick	70-71	C1				
	Raymond Belangie	47-76		A1,C1	29	27	5
1988	Jack Lewis, Sr.	46-47		A1			
	Clyde Basham	48-?		A1	29	29	5
1989	Charles Carroll	58-76		A1			
	Lyle Siefke	63-0		A1			
	Lloyd Maynard, Sr.	57-74		A1			
	Clyde Snyder	68-73	C1				
	Morriss Kair	54-79		A1	30	33	6
1990	Harvey Noble	51-83		A1	30	34	6
1991	Kenneth Fredericks	66-81	C1				
	Ted Boyd	63-65	C1				
	Willis Fields	46-84		A1,C1			
	Darrell Lockwood	74-84	M		33	35	6
1992	Robert Thomson	68-0		A1,C1			
	Arnold Smith	50-79	C1				
	Billy Dorrington	37-80		A1,C1			
	Raymond Carlson	57-84		A1			
	Henry Schnetter	74-84	C1				
	Gerald Nelson	66-0	C1				
	John Calkins	52-58	M		37	38	7
1993	Edward Wittlake	51-64	M				
	George Oldham	55-66		A1			
	Donald Peterson	50-53		A1	38	40	7

YEAR	NAME	YRS @ WRG	DEATH BY ASBESTOS DISEASE		DEATH TOTALS		
			Asbestos Lung Cancer	Asbestosis	Asbestos Lung Cancer	Asbestosis	Total
1994	Donald Howard H. Shrewsberry	48-50 52-84	C1	 A1	39	41	80
1996	Rex Smith Robin Clark William Hostetler Rbt. Stufflebeam	57-86 66-67 59-80 74-86	C1	A1,C1 A2 A1	40	44	84
1997	Donald Riley Thomas Albert Wesley Siefke	60-87 60-62 50-51	 C1 C1	A1 	42	45	87
1998	Robert Graham Arthur Bundrock Donald Johnson	62-90 57-78 50-81		A1,M A2 A1	42	48	90

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housekeeping in the lunchroom.
Q The next document I'd like to direct your attention to is one entitled, Source Emissions, Results of Surveys, 1975. Would that document have been maintained by Grace in its business records in the ordinary course of its business?
A Yes, it would.
Q And am I correct in understanding that this is a compilation apparently for the year 1995 of results of dust surveys setting forth the high, low and average counts for various locations around the facility?
A I think you said "1995." 1975?
Q Yes. 1975. I'm sorry if I said "1995."
A This was a report of samples taken to find points where dust was being emitted so that repairs could be made or changes made. These were engineering samples, as we called them, rather than personnel samples.
Q And for further identification purposes, since we'll be referring to these documents at other times on the one hand and yet we don't want to arbitrarily assign them an exhibit number yet so we can integrate them into the common exhibit number system if any of them are selected for that purpose,

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I think what I'll do is I'll also -- I don't have a specific date on this one, which kind of brings this to mind, so I think what I'm going to also do is just refer to the page numbers that we have assigned them in these volume documents, and that will at least allow us to find this document at a later date, if necessary, and is particularly useful when we don't have a date on the document itself. So we have assigned this document the numbers 2-31 and 2-32.
The second page of the document indicates that there was testing done in downtown Libby at the new Penney's store, the St. Regis office area and the hospital area; is that correct?
A That's correct.
Q And did you participate in that process?
A I didn't participate in these samples, no.
Q There is no indication as to the particular quantification used here in terms of fibers per what. During this time period, assuming that it is the compilation of 1975 surveys, what would have been the system being used to count the fibers?
A Fibers per cubic centimeter of air.
Fibers greater than five microns in length per cubic

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centimeter of air.
Q How often was downtown Libby sampled?
A These kinds of samples, the engineering samples, were normally done by the Libby people, and I don't know offhand or recall. When we went to sample, we'd usually sample in Libby once or twice a year. Maybe we'd take one or two or three samples downtown. I don't recall what Randy Geiger did later in the late '70s ongoing.
Q Why was the downtown Libby air sampled?
A I sampled it to see if there was any fiber detectable. I never found any. I'm somewhat surprised at these results.
Q What was the likely source of these results? For instance, I'm picking -- The St. Regis office area is the middle one, and it says, 1.5. What would be the likely source of that fiber?
A I don't know. I don't know. As far as I could tell in my sampling, there wasn't any significant airborne fiber moved, you know, any distance. This is extremely unusual, considering that some of these levels appear to be as high as samples in the service areas, for instance, on the hill. I don't have any idea, other than perhaps the contamination of the clothing of the person doing

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the sampling, but that's speculation.
Q I have here, for instance, you know -- I'm just arbitrarily picking one here, following up on your statement. On the skip car loading, the average for the skip car loading is 1.39. As I recall, the skip car loading is down in the bottom level of the old dry mill, or at least I think it was still in 1975.
A Yes. Yes.
Q And so comparing that number with the number at the St. Regis office area or, for that matter, the hospital area of 1.1 is a source of surprise to me and, I take it, is a source of surprise to you that it would come up at that level?
A Yes, it is. I don't recall ever having seen this document, because I certainly -- If I did, I would have been out there trying to find out what possibly could have occurred, because that's inconsistent with any results I ever got.
Q The next document that I'd direct your attention to is one entitled, Research Grant Application to W.R. Grace and Company for Epidemiological Studies by Dr. McDonald. Do you see that document?
A Yes, I do.

SOURCE EMISSIONS

Results of Surveys - 1975

	High	Low	Average
Mine - Drilling & Blasting			
Drills	11.97	1.5	5.84
Loading Haul Units			
Shovels	1.14	0.57	0.76
Loaders			0.48 (1 sar
Hauling - Road Use			
Haul Units	4.56	0.35	1.47
Dump			0.57 (1 sar
Dump Dozing (Dozer)	5.13	0.9	2.79
Transfer Point	5.13	0.57	1.91
Dumping			
Screening			
Conveying			
Waste Hopper & Removal			
Conveying to O.S.&B.	4.56	0.57	2.63
Stacking			
Reclaiming			
Conveying to 1000 T Bin			
Filling			
Emptying			
Conveying to Wet Mill- All Floors	20.52	0.57	3.49
High Prob Screens			
Screening			
Extractor			
Dryer			
Feeding			
Discharge			
Mill Traffic - People			
Clean up Water System			
Skipping System			
Conveyor			
Conc. Bins			
Skip Car Loading	1.71	0.9	1.39
Skip Travel			
Lower Ore Bins			
Skip Dump			
Discharging			
Haul Road Traffic			
Conc. Trucks			0.57 (1 sar
Screen Plant - All Floors	3.99	0.57	1.66
Dumping			
Conveying			
Screening			
Hauling to Storage			
Haul Truck	1.96	0.23	1.24
Open Bins			
Loading Hoppers			
Tunnel & Conveying	23.94	2.2	12.25
Car Loading			
Bag House Discharging			
#5 Dumping			
Hauling to Bag Plant			

EXHIBIT

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Results of Surveys - 1975

	High	Low	Average
Bagging	11.3	1.1	5.43
Car Loading	6.8	2.3	4.06
Bag House Discharging			
Service Areas			
Garage	2.2	0.38	(2 samples
Sheet Metal Shop	3.99	0.57	1.73
Machine Shop	2.85	0.57	1.26
Warehouse			
Research			0.57 (1 sa
Other office Areas			
Vehicle Traffic			
Outside Locations			
Mine General Area	0.9	0.38	
E. of Mine - Reflector			2.0 (1 sam
Tub Gulch - W of Mine			0.6 (1 sam
Highway 37 - Between Mine & Libby			1.8 (1 sam
Downtown Libby			
New Penney's Store			0.67 (1sam
St. Regis Office Area			1.5 (1 sam
Hospital Area			1.1 (1 sam

Poor Quality Source Document

The following document images have been scanned from the best available source copy.

To view the actual hard copy, contact the Superfund Records Center at (303) 312-6473.

W. R. GRACE & CO.
MINE - MILL OPERATIONS
DUST SURVEY

LIBBY
ENOREE

DATE	FILTER I.D.	OPERATION/AREA SAMPLED	PUMP OPERATION	SAMPLING TIME	REMARKS	LAB RESULTS
12-4-75	#15	SCREEN PLANT RIVER LOADI		60 MIN	IN OFFICE	0.28
	#16	SCREEN PLANT ROVING MAN		65 MIN	CAR DOCKING (TEMPTED DUST WHEELS	2.10
	#17	BAG HOUSE LOADING		60 MIN	RUNNING & LOADING #1	11.30
	#18	BAG HOUSE CAR				12.37
	#19	DOWNTOWN (ST. REGIS OFFICES)		15 MIN	WINDY RAIN STOPED	1.52
	#20	DOWNTOWN (HOSPITAL)				
12-3-75	#21	SCREEN PLANT TRANSFER TRUCK		43 MIN	USING KENWORTH TRUCK	

Include weather, wind or draft, and unusual sampling conditions in Remarks.

Sampling Done By Robert Kennedy

WIND: SOUTH WEST BEROM. 29
TEMP.: 32°F RAINING HEAVY

Laboratory Evaluation Done By Jean A. Nicholson

Date 1-13-76

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